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Development and refinement of three animal-based broiler chicken welfare indicators

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Abstract

*This study aimed to refine bird-soiling as a broiler chicken (*Gallus gallus domesticus*) welfare indicator, and to develop and test two additional indicators, namely contact dermatitis on the breast and abdominal areas and carcass scratches. We constructed a questionnaire with pictures of birds presenting different indicator levels for classification as absent, low, moderate or severe. The questionnaire was sent to 146 invited experts for the first round and 88 for the second, in a Delphi process. Visual scales were built for the target indicators, which were tested by three assessors in ten flocks on-farm ($n = 1,303$ birds) and at the slaughterhouse ($n = 1,631$ birds). High concordance was observed among groups of Delphi respondents and among assessors. A total of 90.7% of the birds were either moderately or severely soiled, 99.9% were poorly feathered, 73.4 and 90.0% presented erythema and carcass scratches, respectively. The correlations between litter quality and all outcomes assessed on-farm, and between bird-soiling and contact dermatitis on the breast and abdominal areas, were moderate. Results suggest that adoption of the proposed scales may improve our ability to assess broiler chicken welfare, since relevant problems were prevalent and measurement consistency acceptable. Substantial concordance observed among assessors encourages application of these animal-based indicators to assess broiler chicken welfare in a wide range of poultry houses, in a variety of different countries, thereby allowing the scales to be tested in a host of animal welfare conditions.*

Keywords: animal welfare, outcomes, plumage cleanliness, skin irritation, welfare assessment, welfare measures